

Algebra II GHP
Unit 10 Review

Name _____
Date _____

Divide the Polynomials **Using Long Division:**

1) $(x^4 + 2x^3 - 3x^2 - 3x - 14) \div (x - 2 + x^2)$

2) $(-6 + 7x^2 + 8x^3 + 2x + 4x^4) \div (2x + 3)$

Divide the Polynomials **using Synthetic Division:**

3) $(x^4 - 3x^3 + 2x^2 - 14x + 24) \div (x - 3)$

4) $\frac{x^4 - 2x^3 - 8x + 16}{x + 2}$

5) True or False. If it is false, please correct.

a) If $x = 2$ is a zero of $f(x) = x^3 + 2x^2 - x - 14$, then $f(-2) = 0$. _____

b) If $x - 3$ is a factor of $f(x) = x^5 - 2x^4 - 10x - 111$, then $f(3) = 0$. _____

c) If the polynomial $f(x)$ is synthetically divided by $x + 6$ and the remainder is 5, then $f(-6) = 5$. _____

d) If $f(0) = 4$ for the polynomial $f(x)$, then $x - 4$ is a factor of $f(x)$. _____

6) Determine if $x + 4$ is a factor of the polynomial $f(x) = x^4 + 3x^2 - x - 6$ using substitution.

7) Determine if $x = 2$ is a zero of the polynomial $f(x) = x^4 + 2x^2 - x - 22$ using synthetic division.

8) Find the polynomial, in factored form, with the roots $x = \{-2, 2, 3\}$ and $f(1) = 12$.

9) $f(x) = 3x^3 + 2x^2 - 7x + 2$

A) How many roots will the function have? _____

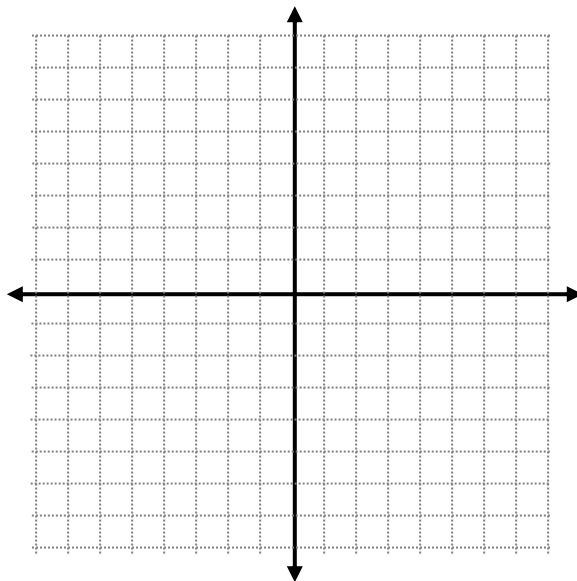
B) List all the possible rational roots: _____

C) Perform the synthetic division.

D) Write the polynomial in its factored form with each factor having only integer coefficients. $f(x) =$ _____

E) Then write the roots of the polynomial. $x = \{$ _____

F) Sketch the graph below



10) Sketch the graph of the polynomial function below: $f(x) = 4(x - 3)(x - 2)^2(x + 1)$

